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Reconfiguring Health Workforce Policy So That Education, Training, And Actual Delivery Of Care Are Closely Connected

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ABSTRACT There is growing consensus that the health care workforce in the United States needs to be reconfigured to meet the needs of a health care system that is being rapidly and permanently redesigned. Accountable care organizations and patient-centered medical homes, for instance, will greatly alter the mix of caregivers needed and create new roles for existing health care workers. The focus of health system innovation, however, has largely been on reorganizing care delivery processes, reengineering workflows, and adopting electronic technology to improve outcomes. Little attention has been paid to training workers to adapt to these systems and deliver patient care in ever more coordinated systems, such as integrated health care networks that harmonize primary care with acute inpatient and postacute long-term care. This article highlights how neither regulatory policies nor market forces are keeping up with a rapidly changing delivery system and argues that training and education should be connected more closely to the actual delivery of care.

Health care professionals are being challenged to find new ways to organize care and develop systems that hold providers accountable for the quality, cost, and patient experience of care.[1] The once incremental pace of change is accelerating, and there is evidence that long-standing paradigms are dramatically shifting.[2] For example, the relatively slow acceptance of prepaid and managed care systems is being replaced by the rapid adoption of bundled and risk-based payment models.[3,4] Early adopters of accountable care organizations (ACOs) are finding that their workforce is shifting from acute care to community- and home-based settings with increasing roles for physicians, nurses, social workers, patient navigators and outreach coordinators, and other clinicians in providing enhanced care coordination, better medication management, and improved care transitions.[5]

The training of health professionals, however, lags behind these reforms because it remains largely insulated from change behind the walls of schools of medicine, dentistry, pharmacy, and nursing. Medical training is done primarily in hospitals, while the greatest challenges are found in coordinating care in multiple outpatient settings. This article describes how health workforce policy was done in the past. It illustrates some of the specific changes under way and how they are changing the health care workforce. Further, it suggests that closer links should be built between the day-to-day caring for patients and the training of the people who deliver that care.

Workforce Policy Center Stage Again

Health workforce policy took center stage in an earlier *Health Affairs* thematic issue in 2002.[6] Articles in that issue described future efforts to

shape the clinical workforce as a "dream"[7] or subject to "hand-to-hand" combat.[8] The "hands" in this case were described by Kevin Grumbach as the "heavy hand" of government regulation and the "invisible hand" of market forces that constantly pushed the United States into a rolling series of surpluses followed by shortages.[8] The "dream," as Uwe Reinhardt saw it, was that regulation and control could actually work. He offered in its place a change in policy to expose physicians to the actual costs of their training while pushing them to the right places and specialties with judiciously targeted tax-financed loan repayment.[7]

In much of the rest of the world, coordinated workforce planning that develops national and regional goals has long been accepted as a legitimate policy exercise. This work is achieved by pairing technical workforce experts and policy makers with clinicians and patients to guide the structure of the health workforce—in both numbers and skill mix—to meet the needs of delivery systems and the population.[9] In the United States a mix of government policies and professional guidelines combine with strong market forces to shape the health care workforce; the latter almost invariably dominates but with a recognition among most stakeholders that regulation is necessary.[10]

As a result, the United States has forgone any substantial investment in workforce planning except for the veterans' health system.[11] The United States has left it up to states, professional associations, employers, payers, and other stakeholders to negotiate their interests via the market and the political process. The result is a complex and uncoordinated web of training institutions efforts, licensing board rules, placement programs such as the National Health Service Corps, and payment regimes. These are not compared or evaluated to determine if they are producing the right people for the right work to meet patients' needs.

With many observers asking if there will be enough providers to meet the needs of rapidly innovating systems, this *laissez-faire* system is now in flux. The Centers for Medicare and Medicaid Services has funded numerous pilots to identify new models for workforce development and payment to support health system innovation. These pilots, however, are relatively isolated and have not been linked in any systematic way to broader systems or structures that govern the way we train, regulate, or deploy the health workforce.

The earlier *Health Affairs* thematic issue raised many familiar, unanswered questions, including a fundamental one: How many of what kinds of professionals with what competencies are need-ed to care for our population? This issue asks the same questions but adds another: What has changed over the past ten years?

The Affordable Care Act has created a new vocabulary to describe networks of providers tied together to offer enhanced care coordination. The ACO and the patient-centered medical home have become seemingly ubiquitous models for holding systems accountable for the care provided to patients across community, ambulatory, and acute care settings. These emerging models of integrated care have been abetted by increasing market concentration in health care delivery systems.

ACOs, which take on risk by having a portion of their reimbursements tied to the outcomes of care for a predetermined Medicare population, are seeking to reduce costs and improve care by ramping up screening and preventive care and the coordination of services. This restructuring will have far-reaching implications for how clinical work is organized and compensated, with more work shifting to lower-paid and allied health workers who provide care in less costly community- and home-based settings.

Teams And Workforce

Almost all of the new arrangements include plans or structures that call for more "team-based care" and make use of "enhanced" roles for various professions, despite a lack of consensus on what those two terms really mean. Teams have been described as groups of people whose roles continuously shift in response to internal and external forces, including patient expectations; policy and payment changes; organizational factors; geographic proximity of other providers; and professional regulation, training, and attitudes.[12,13] Broadly conceptualized, roles within teams fall into two categories: lower-cost health professionals acting as substitutes for higher-cost ones (for example, nurse practitioners for physicians), or lower-cost health professionals functioning as supplements who extend and enhance the work of others (for example, navigators to coordinate care or discharge planners to help patients make the transition from acute to postacute care). Despite the numerous calls for more team-based models of care, relatively little attention has been given to how to prepare physicians, nurses, therapists, technicians, and others already in the workforce to practice in accountable or reformed teams.

Health care professionals have been seen more as parts of a puzzle that need to be carefully fit together into a transformed system of care than as fungible resources that can be crafted or re-made to help build a truly reformed and more

effective health care delivery system. For example, although the use of electronic health records (EHRs) has burgeoned with the implementation of the federal program to certify and reward the meaningful use of health information technology, there is limited understanding of how health professionals can work with EHRs to change the flow of work or how work should be reconfigured and reallocated among team members. EHRs are shaping the work of clinicians as much as they are being adopted for and adapted to current practices. To be optimally effective, EHRs require broad and rapid adoption, practitioners must pay constant attention to data entry, and care patterns have to be reengineered to accommodate EHRs' use.[14,15]

Projecting Supply, Demand, Need, And Requirements

That workforce projections are controversial should come as no surprise; any projection will inevitably be ambushed by unknown or unexpected factors and events that affect future workforce supply and demand. The surprising thing is that projections, whether based on empirical models or "expert" opinion, are criticized for not correctly predicting the future when their purpose is almost always to change policies and practices. Projections, when accepted as roughly correct, are often followed by policy shifts that, in turn, change the future supply or pipeline of workforce production.

Projections turn out to be wrong either because it is not known how many physicians there are[16] or because there is a lack of understanding of the true relationship between physician supply and health outcomes.[17] They are, in one sense, "projectiles" shot across the bows of policy makers to stimulate action; they paint a picture of what is likely to happen if some desirable policy is not implemented. If a policy is changed, then the projection is likely to turn out wrong because it helped cause changes in the factors that drove the model.

For example, the Graduate Medical Education National Advisory Committee's 1980 projection of a physician surplus was used to justify cutbacks in federal support to medical education, thus changing medical school growth trends. That policy shift reduced production and eventually led to a perceived shortage.[18] The more recent Association of American Medical Colleges forecasts of shortages of physicians have similarly prompted the expansion of existing and the opening of new medical schools and have put strong pressure on the debate over how to support graduate medical education to provide the additional training necessary to produce practic-

ing physicians.[19]

Recent work has focused on developing dynamic projection models that are amenable to changes in the assumptions on which they are based and that allow policy makers to simulate the effects of potential policy scenarios[20] on workforce supply and demand. This type of work is supported by the National Center for Health Workforce Analysis in the Department of Health and Human Services, but the center struggles with a lack of both up-to-date inventories of existing health professionals and a common data set to measure practitioner capacity or simply identify the location of practice.[21,22]

The modeling field in the United States and other countries[23] is moving toward using projections not as a method for generating one "right" answer but as a way to educate health professionals and their associations, policy makers, and other workforce stakeholders about the complexity of projecting future workforce needs and the effects of the policy options they have at hand. Engaging stakeholders—particularly clinicians—in the modeling process can generate numerous desirable results, including a better understanding of how rapid health system change affects workforce deployment and improved communication between the professions and policy makers. Having clinicians involved in modeling can also serve as a check on the "face validity" of model outputs and can generate clinical input in areas where data inputs are weak. Stakeholders engaged in modeling can also help identify ways to redesign care processes to address workforce shortfalls or surpluses.

Models and projection thus cannot provide a single "right" answer in a system that is rapidly changing. The important thing is to have a model that can be used to simulate the effect of policy change and educate stakeholders about the effects of policy options. For example, a model might show that increasing graduate medical education slots will likely have a relatively small effect on the overall match of supply to need compared to increasing productivity and delaying retirement.

Efforts to model the nursing workforce have been complicated by nursing's persistent sine-wave pattern of shortages prompting policy actions that, in turn, stimulate rapid growth leading to surpluses.[24] Analyses of nurse supply and demand remain doggedly unconnected to physician workforce projections. There are no examples of national models that simultaneously project the supply of both professions despite their substantial overlap in providing care. Combining the two in projections is now an imperative given nurses' complementary and supplementary roles in delivering or supporting

many of the new services required by ACOs and patient-centered medical homes, such as care coordination, patient navigation, transition care, and population health management.

An obvious link would be in the production and deployment of nurse practitioners and their impact on the "effective supply" of primary care practitioners,[25,26] but including "nonphysicians" in physician supply-demand calculations has proved difficult. For example, in the development of an index to identify shortage areas for federal support, an intense battle was fought in a special "negotiated rulemaking" committee mandated by the Affordable Care Act over how to count nurse practitioners and physician assistants in a formula for proposed new Health Professional Shortage Areas and Medically Underserved Populations.[27] Advocates from the nurse practitioner and physician assistant professions felt strongly that they should be assigned a weight of at least 0.75 full-time-equivalent of a primary care physician to account for their contribution to community-based primary care. Counting them would often increase the local supply above a shortage threshold, making the community or population lose its designation and thus its eligibility for federal support.

Productivity In The Health Care Workforce

The promise of technology as the way to improve the quality of care and lower costs, especially via the EHR, has been promoted on the basis of its potential to improve productivity in the system by making care more efficient and effective.[28] This is essentially an economic calculus: Can more be done and done better and at lower cost? That question remains to be answered.

What the United States has done is rapidly increase the number of people and types of workers who are delivering care. Employment in the health care sector grew rapidly between 2000 and 2010—at a rate of greater than 3 percent annually—and even faster growth has been projected for the following decade, but there are signs of a slowdown in that growth.[29] This is in contrast to overall employment, which shrank by 0.2 percent per year in the first decade of this century and is projected to grow by only 1.3 percent during 2010–20.

Employment growth in ambulatory health services has been strong at 3.3 percent per year, with an anticipated increase to 3.7 percent. These labor inputs may be growing faster than patient care needs, thus making the overall workforce less productive and efficient. On the other hand, that same expanding workforce may be generating greater value by improving out-comes through better coordination and greater intensity of care. Whether the system is becoming more or less efficient in terms of value for money because of the addition of new specialties or new professions has seldom been asked[30] and even less often answered.[31]

Professions Unto Themselves

The United States accepts in policy and practice the idea of "sovereign" and self-regulating professions that have substantial control over their place in the health care system. This approach has meant that workforce policy has been largely shaped around the demands of the professions and not around the needs of the patients. The question of whether the professions should control entry into their respective realms through self-regulation remains largely out of the mainstream of debate but is raised from time to time by libertarian thinkers.[32] There are very intense battles over scope-of-practice rules, with advanced-practice nurses making strong claims on primary care, nurse anesthetists being challenged over their contributions by anesthesiologists, and the development of dental therapists' work being challenged by dentists. These conflicts are becoming sharper despite a body of evidence that shows that most of these work and professional roles are effective in saving money and maintaining or improving quality.[33]

New and different types of health professionals—community health workers, patient navigators, health coaches, care coordinators, and more—are attempting to create their own space in the health care delivery system as their contributions to the new payment and organizational models become more apparent. The emergence of new professions runs counter to theories of how health care workers should function in teams adapting and "upskilling" existing professional or paraprofessional roles to meet patients' needs.[34]

The progressive division of labor and the creation of specialized labor categories that are able to do one focused job more efficiently than a range of work has been the pathway to greater productivity in manufacturing and other sectors but to a lesser extent in health services. In the health care realm, increasing specialization is reflected in the growing complexity of how a hospital is staffed to care for patients—a process that has given us hospitalists, intensivists, nocturnalists, and other types of practitioners who are defined by their functional role as much as by their disciplinary specialization.[35] The proliferation of new professions and professional roles does not necessarily lead to greater efficiency because, as David Meltzer and Jeanette Chung

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Employment growth
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point out, there are real costs associated with coordination.[35] Those costs have not been calculated or even anticipated in most of the calls for reorganization using teams.

The rise of additional specialists and professions within the health care "team" in new models of care have made Irving Zola and Stephen Miller's description of long-term care commonplace: "In the course of…long term disorders, the doctor recedes further and further into the background, eventually assuming the role of occasional medical consultant. With this, the physiotherapist, visiting nurse, dietician, prosthetist becomes essentially 'the doctor' not only in terms of primary day-to-day management, but in terms of the transference relationship as well."[36]

The career paths for physicians, nurses, and even dentists are multiplying. They involve serial training in fellowships to acquire new techniques and skills; adapt to shifts in practice focus; and, more often, prepare them for a return or to introduce them to a type of practice that is more flexible—essentially a return to a generalist role.[37] At the simplest level of care, the nature of labor for direct care workers who feed, move, and clean patients has become dominated by part-time jobs with fewer and fewer benefits.[38] To achieve true integration, teams must accommodate the multiple needs of the people working around the patient, including highly trained physicians who seek professional satisfaction and high rewards as well as unlicensed personnel whose formal connection to the system is tenuous but whose practical training and skills are often crucial in generating quality care and patient satisfaction.

The pressure to coordinate, or perhaps simply serve as a traffic cop controlling, the flow of practitioners around the patient, has emerged as a true challenge. Atul Gawande's description of his mother's care during her knee replacement gives a sense of what a contemporary hospital-based team is like: It is large, potentially irrational, and likely to grow.[39] We know far less about what makes for an effective team of ambulatory caregivers when it comes to managing transitions for patients with complex chronic illnesses from community to acute care settings and back. If the workforce needs of the future are to be adequately assessed, it is necessary to first get a better handle on who will make up the workforce in each setting in the future.

Training And Education As Field Of Reform
Training professionals for the future of team-based care has been recognized as a real chal-

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lenge. The Institute of Medicine is currently supporting a committee, the Global Forum on Innovation in Health Professional Education, to explore how best to promote "transdisciplinary professionalism." The group recognizes the challenges of integrating the diverse cultures and skill sets of the various professions, the problem of teaching "followership" and leadership, and the practical problem of measuring how well a team works.

The National Center for Interprofessional Practice and Education has been funded by the Health Resources and Services Administration to do similar work. These efforts follow on a series of precursor programs in interdisciplinary training that never quite found traction in formal policy or in health professions training.[40] The central task for reformed health care delivery may indeed be to create and sustain teams of different professional pedigrees. The question is whether teams can be constructed around a template or whether it must happen in practice with ad hoc teams forming around the patient and their needs.

Innovations In Training And Education
The ways in which health care professionals are taught are changing rapidly. Additionally, there is pressure to streamline pathways into professions.[41] Online courses, clinical simulators, and learning teams have made education more flexible. Still, little is known about what constitutes efficient and effective clinical training.[42] The true costs of preparing health professions are being revealed by the rapid growth in the number of private, including for-profit, health professions institutions that have sprung up to meet demand from prospective students.[43] These include osteopathic medical schools and physician assistant programs and umbrella "Health Science" schools that provide training for nurses, therapists, and technicians. Public community colleges in some states fill this niche, but the market

has also responded vigorously to train workers, especially allied health workers, for reformed, if not fully coordinated, systems.[44]

The "safety net" of public clinics, hospitals, and private charity caregivers is one place where innovation in role assignment and integration of multiple professions has been welcomed,[45] but the benefits are difficult to calculate. Community health centers (also known as federally qualified health centers) have become testing grounds for a new approach to graduate medical education through the Teaching Health Centers Program.[46] Through this program, the new centers are funded as temporary demonstrations whose long-term outlook depends on future appropriations.[47] They do offer a new approach to meeting the growing need for locations to provide graduate medical education given the recent rapid rise in the number of US medical school graduates and the apparent "bottleneck" that has slowed growth in residency training and thus physicians' progression into the workforce.

Revolutionary changes in the nature and form of health care delivery are reverberating backward into medical education as leaders of the new practice organizations demand that the educational mission be responsive to their needs for practitioners who can work with teams in more flexible and changing organizations. In the face of this pressure, the traditional response of health educators—that they should have autonomy in defining the educational mission—is no longer viable. Instead, more explicit, formal, and systemic linkages between practice and educational institutions that are coordinated with maintenance of certification and licensing are inevitable.[48] There are proposals to base certification and licensure on actual performance and patient care outcomes instead of on simply meeting additional education and training requirements.[49] This new pressure to make medical education at all levels more accountable to public and patient needs means that we must measure how medical education affects medical care outcomes, not just the outputs of the programs and institutions.

Conclusion

We often hear how the United States has a nonsystem of health care—a fair characterization of a very adaptable sector of the economy that combines rigid professional norms, rapid shifts in staffing and deployment of workers to capture funding streams, and the constant creation of new work roles and employment opportunities. It is largely these characteristics of the workforce that have both constrained the coordination of health care and allowed the system to grow very rapidly. To blunt rising costs, it seems necessary to find ways to temper this professional and occupational exuberance to achieve both greater efficiency and effectiveness.

To anticipate these changes and prepare the workforce for new roles, it will be necessary to invest in workforce planning but not solely at the macro level of overall supply. Investments are needed in research and implementation studies to help foster greater understanding about the actual content of care that is required in the new systems. Investments in research are also needed to identify how best to allocate new caring roles among a set of professions and disciplines that are trained and deployed in a coordinated fashion. Workforce planning needs to be more "bottom up" as it seeks to identify the "right kind" and the "right number" of workers. ∎

NOTES

1 Berwick DM, Hackbarth AD. Eliminating waste in US health care. JAMA. 2012;307(14):1513–6.
2 Berwick D. Escape fire: designs for the future of health care. San Francisco (CA): Jossey-Bass; 2004.
3 Marmor T, Oberlander J. From HMOs to ACOs: the quest for the Holy Grail in US health policy. J Gen Intern Med. 2012;27(9):1215–8.
4 Emanuel EJ. Why accountable care organizations are not 1990s managed care redux. JAMA. 2012; 307(21):2263–4.
5 Silow-Carroll S, Edwards JN (Health Management Associates, Lansing, MI). Early adopters of the accountable care model: a field report on improvements in health care delivery [Internet]. New York (NY): Commonwealth Fund; 2013 Mar [cited 2013 Sep 24]. Available from: http://www.commonwealthfund .org/~/media/Files/Publications/ Fund%20Report/2013/Mar/1673_ SilowCarroll_early_adopters_ACO_ model.pdf
6 Iglehart JK. The woeful neglect of health care workforce issues. Health Aff (Millwood). 2002;21(5):7–8.
7 Reinhardt UE. Dreaming the American dream: once more around on physician workforce policy. Health Aff (Millwood). 2002;21(5): 28–32.
8 Grumbach K. Fighting hand to hand over physician workforce policy. Health Aff (Millwood). 2002;21(5): 13–27.
9 Tomblin Murphy G, Mackenzie A, Alder R, Langley J, Hickey M, Cook A. Pilot-testing an applied competency-based approach to health human resources planning. Health Policy Plan. 2012 Dec 18 [Epub

ahead of print].

10 Rice T. Can markets give us the health system we want? J Health Polit Policy Law. 1997;22(2): 383–426.

11 Lipscomb J, Kilpatrick KE, Lee KL, Pieper KS. Determining VA physician requirements through empirically based models. Health Serv Res. 1995;29(6):697–717.

12 Laurant M, Harmsen M, Wollersheim H, Grol R, Faber M, Sibbald B. The impact of nonphysician clinicians: do they improve the quality and cost-effectiveness of health care services? Med Care Res Rev. 2009;66(6 Suppl):36S–89S.

13 Porter ME, Pabo EA, Lee TH. Redesigning primary care: a strategic vision to improve value by organizing around patients' needs. Health Aff (Millwood). 2013;32(3): 516–25.

14 Holroyd-Leduc JM, Lorenzetti D, Straus SE, Sykes L, Quan H. The impact of the electronic medical record on structure, process, and outcomes within primary care: a systematic review of the evidence. J Am Med Inform Assoc. 2011;18(6): 732–7.

15 Kellermann AL, Jones SS. What it will take to achieve the as-yet-unfulfilled promises of health information technology. Health Aff (Millwood). 2013;32(1):63–8.

16 Staiger DO, Auerbach DI, Buerhaus PI. Comparison of physician workforce estimates and supply projections. JAMA. 2009;302(15): 1674–80.

17 Goodman DC, Fisher ES. Physician workforce crisis? Wrong diagnosis, wrong prescription. N Engl J Med. 2008;358(16):1658–61.

18 Steinwachs D. GMENAC's projection of a future physician surplus. Implications for HMOs. Group Health J. 1983;4(1):7–11.

19 Kirch DG, Henderson MK, Dill MJ. Physician workforce projections in an era of health care reform. Annu Rev Med. 2012;63:435–45.

20 Fraher EP, Knapton A, Sheldon GF, Meyer A, Ricketts TC. Projecting surgeon supply using a dynamic model. Ann Surg. 2013;257(5): 867–72.

21 Lewin Group. The status of data sources to inform health workforce policy and supply adequacy. Washington (DC): Office of the Assistant Secretary for Planning and Evaluation; 2010 May 6.

22 Bureau of Health Professions. The physician workforce: projections and research into current issues affecting supply and demand. Rockville (MD): Health Resources and Services Administration; 2008 Dec.

23 Ono T, Lafortune G, Schoenstein M. Health workforce planning in OECD countries: a review of 26 projection models from 18 countries. Paris: Organization for Economic Cooperation and Development; 2013.

24 Auerbach DI, Staiger DO, Muench U, Buerhaus PI. The nursing workforce in an era of health care reform. N Engl J Med. 2013;368(16):1470–2.

25 Green LV, Savin S, Lu Y. Primary care physician shortages could be eliminated through use of teams, nonphysicians, and electronic communication. Health Aff (Millwood). 2013;32(1):11–9.

26 Newhouse RP, Weiner JP, Stanik-Hutt J, White KM, Johantgen M, Steinwachs D, et al. Policy implications for optimizing advanced practice registered nurse use nationally. Policy Polit Nurs Pract. 2012;13(2): 81–9.

27 Department of Health and Human Services. Negotiated Rulemaking Committee on the Designation of Medically Underserved Population and Health Professional Shortage Areas: final report to the secretary. Washington (DC): HHS; 2011 Oct 31.

28 Fisher ES, Staiger DO, Bynum JP, Gottlieb DJ. Creating accountable care organizations: the extended hospital medical staff. Health Aff (Millwood). 2007;26(1):w44–57. DOI: 10.1377/hlthaff.26.1.w44.

29 Altarum Institute, Center for Sustainable Health Spending. Health Sector Indicators: insights from the Bureau of Labor Statistics (BLS) August 2013 employment data [Internet]. Washington (DC): The Institute; 2013 Sep 9 [cited 2013 Oct 1]. (Labor Brief). Available from: http://altarum.org/sites/default/files/uploaded-related-files/CSHS-Labor-Brief_September%202013.pdf

30 Kocher R, Sahni NR. Rethinking health care labor. N Engl J Med. 2011;365(15):1370–2.

31 Ozcan YA, Luke RD. Health care delivery restructuring and productivity change: assessing the Veterans Integrated Service Networks (VISNs) using the Malmquist approach. Med Care Res Rev. 2011;68(1 Suppl): 20S–35S.

32 Svorny S. Medical licensing: an obstacle to affordable, quality care. Washington (DC): Cato Institute; 2008 Sep 17. (Policy Analysis No. 621).

33 Dower C, Christian S, O'Neil E. Promising scope of practice models for the health professions. San Francisco (CA): Center for the Health Professions, University of California, San Francisco; 2007.

34 Weinberg DB, Cooney-Miller D, Perloff JN, Babinbgton L, Avgar AC. Building collaborative capacity: promoting interdisciplinary teamwork in the absence of formal teams. Med Care. 2011;49(8):716–23.

35 Meltzer DO, Chung JW. U.S. trends in hospitalization and generalist physician workforce and the emergence of hospitalists. J Gen Intern Med. 2010;25(5):453–9.

36 Zola IK, Miller SJ. The erosion of medicine from within. In: Freidson E, editor. The professions and their prospects. Beverly Hills (CA): Sage; 1973. p. 165.

37 Kenagy GP, Schneidman BS, Barzansky B, Dalton C, Sirio CA, Skochelak SE. Guiding principles for physician reentry programs. J Contin Educ Health Prof. 2011;31(2): 117–21.

38 Konrad TR. The direct care worker: overcoming definitions by negation. Res Sociol Health Care. 2011;29: 43–75.

39 Gawande A. Big med. New Yorker. 2012 Aug 13.

40 Baldwin DC Jr. Some historical notes on interdisciplinary and interprofessional education and practice in health care in the USA. 1996. J Interprof Care. 2007;21(Suppl 1): 23–37.

41 Emanuel EJ, Fuchs VR. Shortening medical training by 30%. JAMA. 2012;307(11):1143–4.

42 Greiner AC, Knebel E, editors. Health professions education: a bridge to quality. Washington (DC): National Academies Press; 2003.

43 Mychaskiw G 2nd, Wiltshire W. A for-profit medical school. Acad Med. 2009;84(1):5.

44 Lewin ME, Altman S, editors. America's health care safety net: intact but endangered. Washington (DC): National Academies Press; 2000.

45 Chen C, Chen F, Mullan F. Teaching Health Centers: a new paradigm in graduate medical education. Acad Med. 2012;87(12):1752–6.

46 Rich EC. Commentary: Teaching Health Centers and the path to graduate medical education reform. Acad Med. 2012;87(12):1651–3.

47 Stone RI, Bryant N. The impact of health care reform on the workforce caring for older adults. J Aging Soc Policy. 2012;24(2):188–205.

48 Frankford DM, Konrad TR. Responsive medical professionalism: integrating education, practice, and community in a market-driven era. Acad Med. 1998;73(2):138–45.

49 Chen C, Petterson S, Phillips RL, Mullan F, Bazemore A, O'Donnell SD. Toward graduate medical education (GME) accountability: measuring the outcomes of GME institutions. Acad Med. 2013;88(9): 1267–80.